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Australian Academy of Science

Submission to the Senate Foreign Affairs, Defence and Trade Legislation Committee Inquiry into the performance of the Department of Defence in supporting the capability and capacity of Australia's defence industry

This submission relates to terms of reference paragraph (e), "role in enhancing Australia's defence industrial base by pursuing greater advanced scientific, technological and industrial cooperation through AUKUS and other defence partnerships".

The Academy:

- Notes that Australia's strategic context has changed and is changing, including in the science and research sector.
- Calls for a national review of the Australian science system.
- Invites Senators to its annual symposium *International Scientific Collaborations in a Contested World.*

The Australian defence innovation, science and technology ecosystem

The strategic context within which the defence innovation, science, and technology (DIST) ecosystem operates has changed. The Indo-Pacific region is experiencing rapid technological advancements, reshaping the dynamics of political, economic, and military power. A crucial aspect of strategic competition involves leading the development and deployment of advanced technologies.

Obtaining and maintaining asymmetric advantage in technologies such as artificial intelligence, hypersonics, and maritime domain awareness are integral to the Defence Strategic Review (DSR). The DSR has set ambitious targets for the Australian science and technology ecosystem to swiftly discover, translate, and implement science and technology solutions.

More than defence

There is an implicit assumption within the DSR targets that Australia has the necessary scientific capacity to do what needs to be done after decades of, at best, marginal funding. There is an assumption that there is the ability and capacity to deploy science rapidly, robustly, and reliably for national defence after decades of aversion to serious attempts to bring cohesion to the suite of mostly marginal programs that have proliferated over the years. There is an assumption that we can mitigate sovereign risk by flicking a switch and 'she'll be right.'

Achieving the goal requires a major re-alignment of capabilities, a larger and stronger research and development base, and a defence industrial sector that is genuine about collaboration.

Defence needs to change the way it does science, works with science done outside defence, and collaborates with scientists, most of whom are outside defence but are the ones who undertake the fundamental science that underpins technological advances.

The new Advanced Strategic Capabilities Accelerator can build collaborations and partnerships with researchers. But the researchers need to be there.

National review of the science system

Meeting Australia's goal necessitates a significant shift in the operations of the Department of Defence, defence science, and the broader science system.

The Australian Government investment in R&D, which includes Defence, is the lowest on record. This has come about through cycles of hostility, neglect, and drift for over a decade, which have seen national investment in R&D degrade from a high of 2.1% to 1.79% of GDP. Yet, every policy priority, every need of our people, demands advanced science and research capabilities.

The national challenge is to redress this balance and invest more in R&D, but also to invest better and smarter. Continuing with a system that is organised in silos, without coordination or scale, cannot continue. There should be an independent and national inquiry into how Australia can get the most out of its science and research investment. This review should look at how to improve the science and research system - as researchers, institutions, industries, government agencies, and as a nation.

The Australian Government is reviewing or has reviewed some individual elements of the system, but unless we take the opportunity to reform how they work together then the necessity of the moment and the ambitions of our people will go unmet.

These issues and more will be addressed at the Academy's national symposium on November 13 and 14, *International Scientific Collaboration in a Contested World*, at the Shine Dome in Canberra.